

CTCCCTCCAAGTTGTGCAGCCGGGACCGCCTCGGGGTGTCCAGCCGGCTCGCGGAGCCCTCTCGGGGGCGGCGCGGGGGCGGCTCGGGG 90  
 CCCCCCCTGAGCAGAAAAACAGGAAGAACCAGGCTCGGTCCAGTGGCACCCAGCTCCCTACCTCCTGTGCCAGCCGCTGGCTCTGGCA 180  
 GGGCATTCCAGCGTCCCCGACTGTGACCACTTGCTCAGTGTCCCTCTCACCTGCCTCAGTTTCCCTCTCGGGGGCGATCGCGGGGGCGAG 270  
 M A G R

Sma I  
 GCTCTCTGGTTTCTGGCGGGCATTTCACGGCTGTGATTCTGCTGAGGAACTTCCCGGGTGAGCCCCGCTTCTCCGAGCCTGGCACC 360  
 G S L Y S W R A F H G C D S A E E L P R V S P R F L R A W H

Sma I  
 CCCCTCCCGTCTCAGCCAGGATGCCAACGAGGCGCTGGGCCCCGGGCACCCAGTGTATCACCAAATGCGAGCACACCCGCCCAAGCCAG 450  
 P P P V S A R M P T R R W A P G T Q C I T K C E H T R P K P

Stu I Kpn I  
 GGGAGCTGGCCTTCCGCAAGCGGACGTGGTCAACATCCTGGAGGCTCGGAGAACAGAGCTGGTACCGCGTCAAGCACCACACCAGTG 540  
 G E L A F R K Q D V V T I L E A C E N K S W Y R V K H H T S

Pvu II  
 GACAGGAGCGGCTGCTGGCAGCTGGGGCCCTCGGGAGCGGGAGGCCCTCTCCGAGACCCCAAGCTCAGCCTCATGCCGTGGTTCCACG 630  
 G Q E G L L A A G A L R E R E A L S A D P K L S L M P W F H

Pvu II Pst I  
 GGAAGATCTCGGGCCAGGAGGCTGTCCAGCAGCTGCAGCCTCCGAGGATCGGCTGTTCCTGCTCGGGAGTCCGGCGGCCACCCCGGG 720  
 G K I S G Q E A V Q Q L Q P P E D G L F L V R E S A R H P G

Clal  
 ACTACGTCCTGTGCGTCAGCTTTGCCCGGACGTCATCCACTACCGCGTGTGCACCGCGACGGCCACCTCACAATCGATGAGGCGCTGT 810  
 D Y V L C V S F G R D V I H Y R V L H R D G H L T I D E A V

TCTTCTGCAACCTCATGGACATGGTGGAGCATTACAGCAAGGACAAGGGCGCTATCTGCACCAAGCTGGTGAGACCAAABCGGAAACAG 800  
 F F C N L M D H V E H Y S K D K G A I C T K L V R F K R K H

Pst I  
 GGACCAAGTCGGCCGAGCAGGAGCTGGCCAGGGCGGGCTGGTTACTGAACCTGCAGCATTGACATTGGGAGCACAGATCGGAGAGGGAG 990  
 G T K S A E E E L A R A G W L L N L Q H L T L G A Q I G E G

Pst I Stu I  
 AGTTTGGAGCTGTCTGCAGCGTGAGTACCTGGGGCAAAAGGTGGCCGTGAAGAATATCAAGTGTGATGTGACAGCCGAGCCTTCTCG 1080  
 E F G A V L Q G E Y L Q Q K V A V K N I K C D V T A Q A F L

ACGAGACGGCGCTCATGACGAAGATGCAACACGAGAACCTGGTGGCTCTCCTGGGCGTGATCCTGCACCGAGGCGCTGTACATTGTCTATGG 1170  
 D E T A V M T K M Q H E N L V R L L G V I L H Q G L Y I V M

Sma I Pst I  
 AGCAGCTGAGCAAGGGCAACCTGCTGAACCTTCTCGGACCCGGGCTCGAGCCCTCGTGAACACCGCTCAGCTCCTGCACTTTCTCTGC 1260  
 E H V S K G N L V N F L R T R G R A L V N T A Q L L Q F S L

SH3

SH2

Tk

FIGURE 1A

Hind III

ACCTGGCCGACGGCATCGAGTACCTGGAGAGCAAGAAGCTTGTGCACCGCGACCTGGCCCCCGCAACATCCTGGTCTCAGAGGACCTGG 1350  
H V A E G M E Y L E S K K L V H R D L A A R N I L V S E D L

---

TGCCAAAGGTCACCGACTTTGGCCTGGCCAAAGCCGAGCGGAAGGGCTAGACTCAAGCCGGCTGCCCGTCAAGTGGACGGCGCCCGAGG 1440  
Y A K Y S D F G L A K A E R K G T D S S R L P V K W T A P E

---

Nde I

CTCTCAAAACACGGGAAGTTCACCAGCAAGTCGGATGTCTGGAGTTTGGGGTGCTGCTCTGGGAGGTCTTCTCATATGGACGGGCTCCGT 1530  
A L K H G K F T S K S D V W S F G V L L W E V F S Y G R A P

---

Kpn I

ACCTTAAATGTCACCTCAAAGAGGTGTGGAGGCGGTGGAGAAGGGCTACCGCATGGAACCCCCGAGGGCTGTCCAGGCCCGTGCACG 1620  
Y P K H S L K E V S E A V E K G Y R M E P P E G C P G P V H

---

Pvu II

Sma I

TCCTCATGAGCAGCTGCTGGGAGGCAGAGCCCGCCCGCCGCCACCCTTCCGCAAACTGGCCGAGAAGCTGGCCCGGAGCTACGCAGTG 1710  
Y L H S S C W E A E P A R R P P F R K L A E K L A R E L R S

---

CAGGTGCCCCAGCCTCCGTCTCAGGGCAGGACGCCGAGGCTCCACCTGCCCCGAAGCCAGGAGCCCTGACCCCATCCCGTGGGGCCCT 1800  
A G A P A S V S G Q D A D G S T S P R S Q E P

---

TGCCCCAGAGGACCGAGAGAGTGGAGAGTGGGCGTGGGGGCACTGACCAGGCCCAAGGAGGGTCCAGGCGGGCAAGTCATCCTCCTGG 1890  
TGCCACAGCAGGGGCTGGCCACGTAGGGGGCTGTGGCGGCCCCGTGGACACCCAGACCTCCGAAGCATGATCGCCCCATAAAGACGG 1980  
ATTCTAAGGACTCTAAAAAA 2000

FIGURE 1B

CCGCTTTTGTCTAGAGCTTGAGAGTCAAAGTTA. GACCCACATGTATACCTCGGCTCTAGCGAGTCTA JATGATAATATGGATACA 90  
M D T

AAATCTATTCTAGAAGAACTTCTTCTCAAAAGATCACAGCAAAAGAAGAAAATGTCACCAAATAATTACAAAGAACGGCTTTTGTGTTTG 180  
K S I L E E L L L K R S O O K K K M S P N N Y K E R L F V L

ACCAAAACAAACCTTTCTACTATGAATATGACAAAATGAAAAGGGGCAGCAGAAAAGGATCCATTGAAATTAAGAAAATCAGATGTGTG 270  
T K T N L S Y Y E Y D K M K R G S R K G S I E I K K I R C V

CAGAAAGTAAATCTCGAGGAGCAGACGCCTGTAGAGAGACAGTACCCATTTTCTAGATTGTCTATAAAGATGGGCTTCTCTATGTCTATGCA 360 PH  
E K V N L E E Q T P V E R Q Y P F Q I V Y K D G L L Y V Y A

TCAAATGAAGAGAGCCGAAGTCAGTGGTTGAAAGCATTACAAAAGAGATAAGGGGTAACCCCCACCTGCTGGTCAAGTACCATAGTGGG 450  
S N E E S R S O W L K A L Q K E I R G N P H L L V K Y H S G

TTCTTCGTGGACGGGAAGTTCCTGTGTTGCCAGCAGAGCTGTAAAGCAGCCCCAGGATGTACCCTCTGGGAAGCATATGCTAATCTGCAT 540  
F F V D G K F L C C O O S C K A A P G C T L W E A Y A N L H

ACTGCAGTCAATGAAGAGAAACACAGAGTTCCACCTTCCAGACAGAGTGTGAAGATACCTCGGGCAGTTCCTGTTCTCAAAATGGAT 630  
T A V N E E K H R V P T F P D R V L K I P R A V P V L K M D

GCACCATCTTCAAGTACCACCTCTAGCCCAATATGACAACGAATCAAAGAAAACTATGGCTCCAGCCACCATCTTCAAGTACCAGTCTA 720  
A P S S S T T L A Q Y D N E S K K N Y G S O P P S S S T S L SH3

GCGCAATATGACAGCAACTCAAAGAAAATCTATGGCTCCAGCCAACTTCAACATGCAGTATATTCCAAGGGAAGACTTCCCTGACTGG 810  
A Q Y D S N S K K I Y G S O P N F N M Q Y I P R E D F P D W

TGGCAAGTAAGAAAAGTGAAGAGTACAGCAGCAGTGAAGATGTTGCAAGCAGTAACCAAAAAGAAAGAAATGTGAATCACACCACCTCA 900  
W Q V R K L K S S S S S E D V A S S N Q K E R N V N H T T S

AAGATTTTCATGGGAATTCCTGAGTCAAGTTCATCTGAAGAAGAGGAAAACCTGGATGATTATGACTGGTTTGCTGGTAACATCTCCAGA 990  
K I S W E F P E S S S S E E E E N L D D Y D W F A G N I S R

TCACAATCTGAACAGTTACTCAGACAAAAGGGAAAAGAAGGAGCATTATGGTTAGAAATTCGAGCCAAGTGGGAATGTACACAGTGTCC 1080 SHx  
S Q S E Q L L R Q K G K E G A F M V R N S S Q V G H Y T V S

TTATTTAGTAAGGCTGTGAATGATAAAAAAGGAAGTGTCAAACATTACCACGTGCATACAAATGCTGAGAACAAATTATACCTGGCAGAA 1170  
L F S K A V N D K K G T V K H Y H V H T N A E N K L Y L A E

AACTACTGTTTGTATTCCATTCCAAAGCTTATTCTATTATCATCAACACAATTCAGCAGGCATGATCACACGGCTCCGCCACCCTGTGTCA 1260  
N Y C F D S I P K L I H Y H Q H N S A G M I T R L R H P V S

ACAAAGGCCAACAAGGTCCCGACTCTGTGTCCCTGGGAAATGGAATCTGGGAAGTGAAGAGAGATTACCTTGTGAAGGAGCTG 1350  
T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L

GGAAGTGGCCAGTTTGGAGTGGTCCAGCTGGGCAAGTGAAGGGGCAGTATGATGTTGCTGTAAAGATGATCAAGGAGGGCTCCATGTCA 1440  
G S G Q F G V V Q L G K W K G Q Y D V A V K M I K E G S M S

GAAGATGAATTTCTTTCAGGAGGCCAGACTATGATGAAACTCAGCCATCCCAAGCTGGTTAAATTCTATGGAGTGTGTTCAAAGGAATAC 1530  
E D E F F Q E A Q T M M K L S H P K L V K F Y G V C S K E Y

CCCATATACATAGTGACTGAATATATAAGCAATGGCTGCTTGCTGAATTACCTGAGGAGTCACGGAAAAGGACTTGAACCTTCCAGCTC 1620 Tk  
P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S Q L

TTAGAAATGTGCTACGATGTCTGTGAAGGCATGGCCTTCTTGAGAGTCACCAATTCATACACCGGACTTGGCTGCTCGTAACTGCTTG 1710  
L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L

GTGGACAGAGATCTCTGTGTGAAGATCTGACTTTGGAATGACAAGGTATGTTCTTGATGACCAGTATGTCAAGTTCAGTTCGGAACAAAG 1800  
V D R D L C V K V S D F G M T R Y V L D D Q Y V S S V G T K

FIGURE 2A

TTTCCAGTCAAGTGGTGCTCAGCTCCAGAGGTGTTTCATTACTTCAAATACAGCAGCAAGTCAGACGTATGGGCATTTGGGATCCTGATGTGG 1890  
 F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W  
 GAGGTGTTTCAGCCTGGGGAAGCAGCCCTATGACTTGTATGACAACTCCCAGGTGGTTCTGAAGGTCTCCAGGGCCACAGGCTTTACCGG 1980  
 E V F S L G K O P Y D L Y D N S O V V L K V S O G H R L Y R  
 CCCCACCTGGCATCGGACACCATCTACCAGATCATGTACAGCTGCTGGCAGAGCTTCCAGAAAAGCGTCCCACATTTTCAGCAACTCCTG 2070  
 P H L A S D T I Y Q I M Y S C W H E L P E K R P T F Q Q L L  
 TCTTCCATTGAACCACTTCGGGAAAAAGACAAGCATTGAAGAAGAAATTAGGAGTGCTGATAAGAATGAATATAGATGCTGGCCAGCATT 2160  
 S S I E P L R E K D K H .  
 TTCATTCAATTTAAGGAAAGTAGCAAGGCATAATGTAATTTAGCTAGTTTTTAATAGTGTTCTCTGTATTGTCTATTATTTAGAAATGAA 2250  
 CAAGGCAGGAAACAAAAGATTCCCTTGAAATTTAGGTCAAATTAGTAATTTTGTATTGCTGCCCTGATATAACACTTTCCAGCCTATA 2340  
 GCAGAAGCACATTTTCAGACTGCAATATAGAGACTGTGTTTCATGTGTAAAGACTGAGCAGAACTGAAAAATTACTTATTGGATATTCATT 2430  
 CTTTTCTTTATATTGTCATTGTCACAACAATTAAATATACTACCAAGTACAAAAAAAAAAAAAAAAAAAAA 2500

FIGURE 2B

0907250 101601

CCGGACTGGTCGAAAGACAGGAACAGACTTGAACAGGGCGGACAGCTCCTGGCGAAACGAAGACCTGGAGSTTTTACCAGGCATAAGAAG 90  
 AAAAGACACCTTCTAGTCAGCAGCTGCCACAGCTCCTGCTCAGTTTTCCTCGGGGTAGCACCTCCAGCCACAGAAAGCAAGCCGGTAAG 180  
 TCTCTCCAGGTAGGACTTCTGCAACCCAGCTGCTGGACTCATCTGAAACGGGACTTTGCATACTCTCCGAAGTATGGTGAGTTGGTGCT 270  
 H V S W C  
 GACTTCAAAGTTGCCTGGTGAAGGAAGATAAGGTGGATCGCAGAGACTAAGGGGAGAGGGAGAAGCCCTGCTCCTCTCTCCCAACCAAG 360  
 →  
 GCACAATCAGCAACATCTGTGAGAGGCTCTGGGAGTACCTAGAACCTATCTCCCTGTTTGTCCACGGAGGCAGACAAGTCAACCGTGA 450  
 N S N I C O R L W E Y L E P Y L P C L S T E A D K S T V  
 TTGAAATCCAGGGGCECTTTCTCTCCCCAGTCACAGAGGCATGGCCACTACTTTGTGGCTTTGTTTGATTACCAGGCTCGGACTGCTG 540  
 I E N P G A L C S P O S Q R H G H Y F V A L F D Y Q A R T A  
 AGGACTTGAGCTTCCGAGCAGGTGACAACTTCAAGTTCTGGACACTTTGCATGAGGGCTGGTGGTTTGCAGACACTTGGAGAAAAGAC 630  
 E D L S F R A G D K L Q V L D T L H E G W W F A R H L E K R  
 CAGATGGCTCCAGTCAGCAACTACAAGGCTATATTCTTCTAACTACGTGGCTGAGGACAGAAGCCTACAGGCAGAGCCGTGGTTCTTTG 720  
 R D G S S Q Q L Q G Y I P S N Y V A E D R S L G A E P W F F  
 CAGCAATCGGAAGATCAGATGACAGAGAAACAACTATTATTCAGAAAACAAGACCGGTTCTTTCTAATCAGAGAAAGTGAAGCCAAA 810  
 G A I C R S D A E K O L L Y S E N K T G S F L I R E S E S O  
 AAGGAGAATTCTCTCTTTTCTAGTGGAGCAGTTGTAAACACTACAGAATTAAGAGCTGGATGAAGGGGATTTTTTCTCACGC 900  
 K G E F S L S V L D G A V V K H Y R I K R L D E G G F F L Y  
 GAAGAAGATCTTTTCAACACTGAACGAATTTGTGAGCCACTACACCAAGACAAGTGACGGCCTGTGTGTCAAGCTGGGGAACCATGCT 990  
 R R R I F S T L N E F Y S H Y T K T S D G L C V K L G K P C  
 TAAAGATCCAGGTCCAGCTCCATTTGATTGTGCTATAAAACCGTGGACCAATGGGAGATAGACCGCAACTCCATACAGCTTCTGAAGC 1080  
 L K I Q V P A P F D L S Y K T V D Q W E I D R N S I Q L L K  
 CATTGGGATCTGGTCACTTTTCCCAAGTATGGGAGGCTGTGTGGAACAATACCACTCCAGTAGCAGTGAAAAATTAAGAACAGCTTCAA 1170  
 R L G S G Q F G E V W E G L W N N T T P V A V K T L K P G S  
 TGGATCCAAATGACTTCCTGAGGGAGGCACAGATAATGAAGAACCTAAGACATCCAAAGCTTATCCAGCTTTATGCTGTTTGCACTTTAG 1260  
 H D P N D F L R E A O I M K N L R H P K L I Q L Y A V C T L  
 AAGATCCAATTTATATTATTACAGAGTTGATGAGACATGGAAGTCTCAACAATATCTCCAAATGACACTGGATCAAAAATCCATCTGA 1350  
 E D P I Y I I T E L M R H G S L Q E Y L Q N O T G S K I H L  
 CTCAACAGGTAGACATGGCGGCACAGGTTGCCTCTGGAATGGCCTATCTGGAATCTCGGAAGTACATTACAGAGATCTGGCTGCCAGAA 1440  
 T Q Q V D H A A Q V A S G M A Y L E S R N Y I H R D L A A R  
 ATGCTCTCGTTGGTGAACATAATATCTACAAAGTAGCAGATTTTGGACTTGGCAGAGTTTTTAAGGTAGATAATGAAGACATCTATGAAT 1530  
 N Y L V G E H N I Y K V A D F G L A R V F K V D N E D I Y E  
 CTAGACACGAAATAAAGCTGCCGGTGAAGTGGACTGCCCGGAAGCCATTCTAGTAATAAATTGAGCATTAAAGTCCGATGTATGGTCAT 1620  
 S R H E I K L P Y K W T A P E A I R S N K F S I K S D V W S  
 TTGGAATCCTTCTTTATGAAATCATTACTTATGGCAAAATGCCTTACAGTGGTATGACAGGTGCCAGGTAATCCAGATGTTGGCTCAA 1710  
 F G I L L Y E I I T Y G K M P Y S G M T G A Q V I Q M L A Q  
 ACTATAGACTTCCGCAACCATCAACTGTCCACAGCAATTTTACAACATCATGTTGGAGTGGTGAATGCAGAGCCTAAGGAACGACCTA 1800  
 N Y R L P Q P S N C P Q Q F Y N I M L E C W N A E P K E R P

SH3

SH2

TK

FIGURE 3A

CATTGAGACACTGCGTTGGAACTTGAAGACTATTTTCAAACAGACTCTTCATATTCAGATGCAAATAACTTCATAAGATGAACACTGG 1890  
 Y F E T L R W K L E D Y F E T D S S Y S D A N N F I R .  
 ACAAGAATATCAAATAATAAAGTAGCAAAACAAATTCAAATAATCCATTCCAAAATACAATGTTATCAACCAACTGCACAATCAGTTTAT 1880  
 CCTCACATATTCAGTGATAGGATAAAGTTGGCCATGTATTATGAAAAAGATTATTTGTGCATTTTATTGACTGGGCAACACTGCAGGAC 2070  
 AGTCAAGGTCATATATAATTGCTCACTGCCTGGAAAATTAAGCACACTAAACCAAGTTATTTTCTTTTAAAGAGATACTTACATTTCCA 2180  
 TTTATTGTTTCAAATGTGCGGATCAAGAGAATCAACAGATGATAGTCCAATTTTACTCAGTCATGACTGTGTAGCATTCTCTCTTTAC 2250  
 TGATTAGAGTGGTTATTTCATTATTCCTCAGATTGCTGAATCCCATCAGGCTGTTATTATGAAGGAATTTGATTGCTTTGCTGCACAGCAG 2340  
 GACCTGTCCTTTGAGATTTTTTTTCTCTTTTAAATATCCTGTAACACAAATCATGGTAAAGCCATGTTAAATGACTTCATTGTACTTG 2430  
 GACTAATTGCACATTTTTTTCTATGCATAAAAAAATGATGCAGCTGTTGAGAAAACGAAGTCTTTTTCATTTTGCAGAAGGAAATGATGG 2520  
 AATTTTTCTGTACTTCAGTATGTGTCAACTGAGAGTCATATACATTAGTTTTAATCTCTTAATATTGAGAATCAGGTTGCAAAACGGATG 2610  
 AGTTATTATCTATGCAAAATGTGAGAAATGTCTAATAGCCCATAAAGTCTGAGAAATAGGTATCAAAATAGTTTAGGAAAATGAGACGAGA 2700  
 ACAGTAGGATTGCTGTGGCCTAGACTTCTGAGTAATTAATAAAGAAAAAGAAGTACCAAAAAAAAAAAAAA 2770

0007350 04501

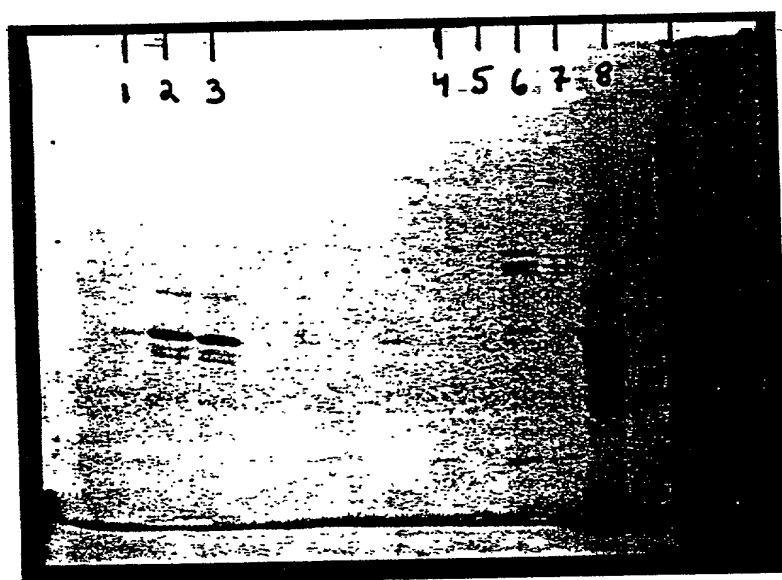
FIGURE 3B

# Expression of MKK1 and MKK2

		<u>MKK1</u>	<u>MKK2</u>
<b>Human</b>			
Meg/Eryth	Meg-01	+++	+++
	K562	++	+
	Mo7e	++	+
	HEL	+++	++
Myelo/Mac	KG-1	+	++
	HL-60	+	+
	TF-1	+	+
B-cell	ALL-1	-	+
	Raji	-	-
	Daudi	-	-
T-cell	Molt-3	-	-
	Jurkat	-	-
Epithelial	Hela	-	-
<b>Rodent</b>			
	BM	+	+++
	Spleen	+++	+
	Thymus	-	-
	Liver	-	-
	Brain	+	-
rat neural	P19	+	-

FIGURE 4

**Immunoprecipitation Of In Vitro Transcribed  
Translated MKK1 And MKK2 Proteins**



**FIGURE 5**



## Antisense MKK1 Expression Suppresses AChE Production In Primary Murine Bone Marrow Cultures

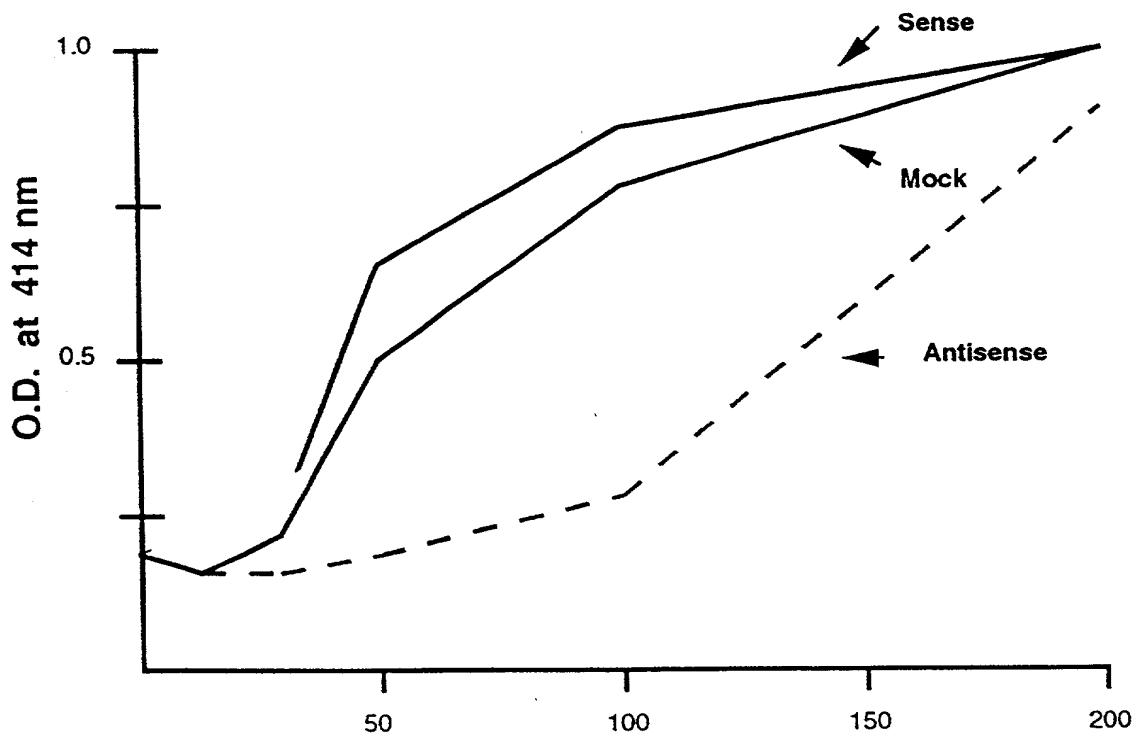


FIGURE 6A

Cell Number x  $10^3$ /200 ul

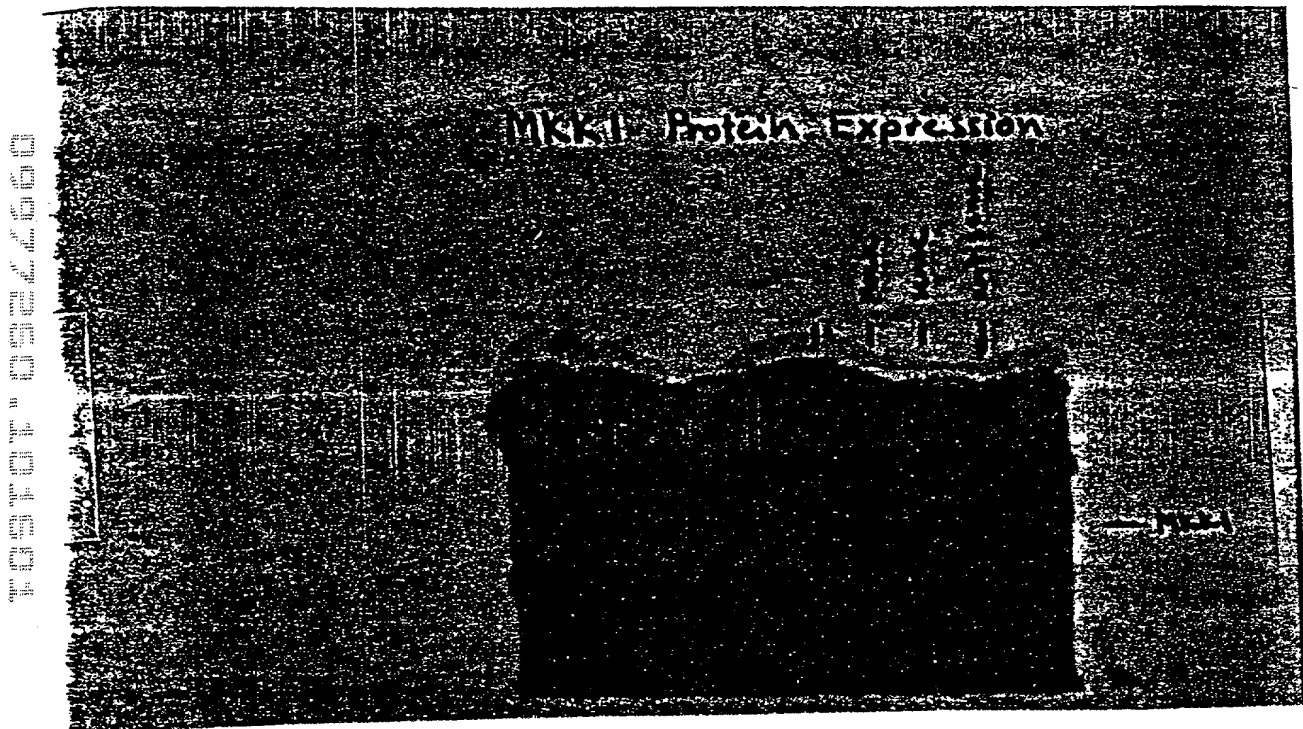


FIGURE 6B

MKK2 AND MKK3 AUTOPHOSPHORYLATE  
TRANSPHOSPHORYLATE PROTEINS WHEN EXPRESSED IN BACTERIA

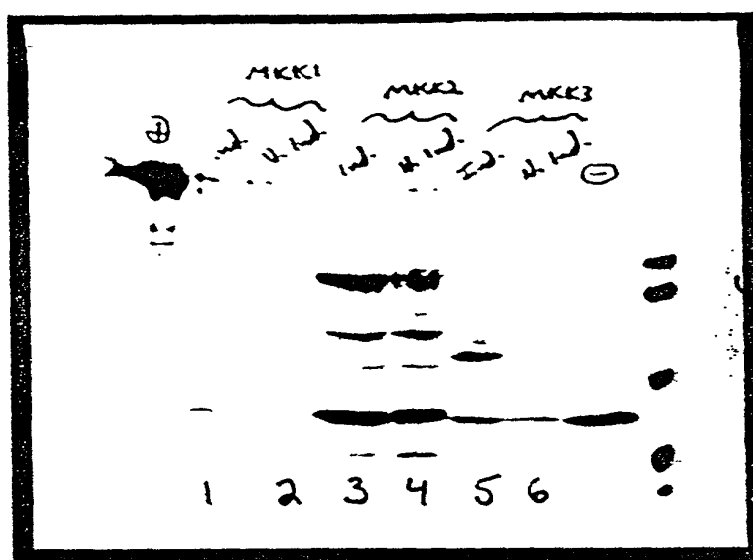


FIGURE 7

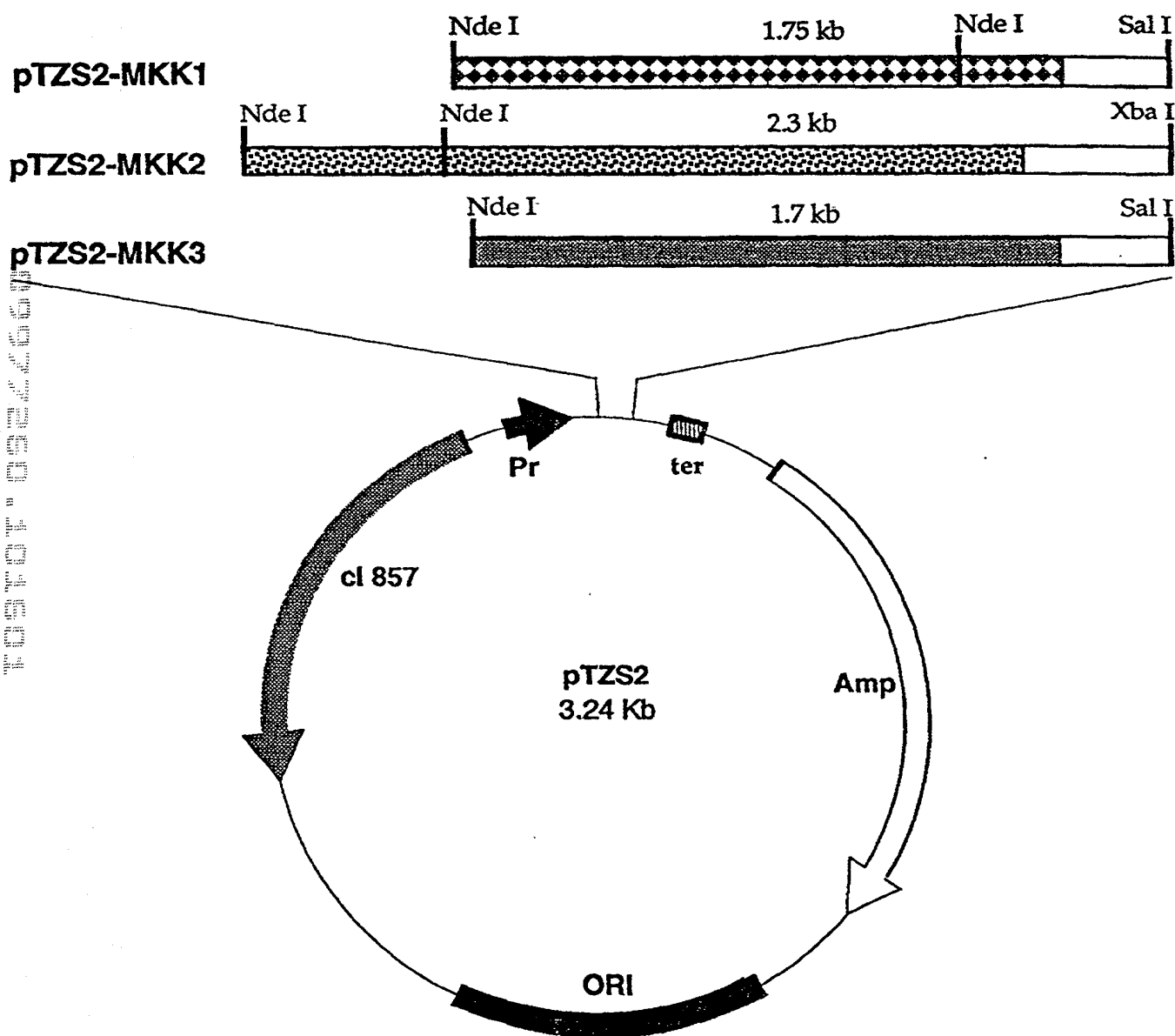


FIGURE 8

1 M A G R G S L V S W R A F H G C D S A E E L P R V S P R F L MKK1 aa  
1 M S A I Q A A - - - - - hCSK (JH0559)

31 R A W H P P P V S A R M P T R R W A P G T Q C I T K C E H T MKK1 aa  
8 - - - - - W P S G T E C I A K Y N F H hCSK (JH0559)

61 R P K P G E L A F R K G D V V T I L E A C E N K S W Y R V K MKK1 aa  
22 G T A E Q D L P F C K G D V L T I V A V T K D P N W Y K A K hCSK (JH0559)

91 H H T S G O E G L L A A G A L R E R E A L S A D P K L S L M MKK1 aa  
52 N K V - G R E G I I P A N Y V Q K R E G V K A G T K L S L M hCSK (JH0559)

121 P W F H G K I S G O E A V O O L O P P E D G L F L V R E S A MKK1 aa  
81 P W F H G K I T R E Q A E R L L Y P P E T G L F L V R E S T hCSK (JH0559)

151 R H P G D Y V L C V S F G R D V I H Y R V L H R D G H L T I MKK1 aa  
111 N Y P G D Y T L C V S C D G K V E H Y R I M Y H A S K L S I hCSK (JH0559)

181 D E A V F F C N L M D M V E H Y S K D K G A I C T K L V R P MKK1 aa  
141 D E E V Y F E N L M Q L V E H Y T S D A D G L C T R L I K P hCSK (JH0559)

211 K R K H G T K S A E E E L A R A G W L L N L O H L T L G A O MKK1 aa  
171 K V M E G T V A A Q D E F Y R S G W A L N M K E L K L L Q T hCSK (JH0559)

241 I G E G E F G A V L O G E Y L G O K V A V K N I K C D V T A MKK1 aa  
201 I G K G E F G D V M L G D Y R G N K V A V K C I K N D A T A hCSK (JH0559)

271 Q A F L D E T A V M T K M O H E N L V R L L G V I L H O - - MKK1 aa  
231 Q A F L A E A S V M T Q L R H S N L V Q L L G V I V E E K G hCSK (JH0559)

299 G L Y I V M E H V S K G N L V N F L R T R G R A L V N T A O MKK1 aa  
261 G L Y I V T E Y M A K G S L V D Y L R S R G R S V L G G D C hCSK (JH0559)

329 L L O F S L H V A E G M E Y L E S K K L V H R D L A A R N I MKK1 aa  
291 L L K F S L D V C E A M E Y L E G N N F V H R D L A A R N V hCSK (JH0559)

359 L V S E D L V A K V S D F G L A K A E R K G L D S S R L P V MKK1 aa  
321 L V S E D N V A K V S D F G L T K E A S S T Q D T G K L P V hCSK (JH0559)

389 K W T A P E A L K H G K F T S K S D V W S F G V L L W E V F MKK1 aa  
351 K W T A P E A L R E K K F S T K S D V W S F G I L L W E I Y hCSK (JH0559)

419 S Y G R A P Y P K M S L K E V S E A V E K G Y R M E P P E G MKK1 aa  
381 S F G R V P Y P R I P L K D V V P R V E K G Y K M D A P D G hCSK (JH0559)

449 C P G P V H V L M S S C W E A E P A R R P P F R K L A E K L MKK1 aa  
411 C P P A V Y E V M K N C W H L D A A M R P S F L Q L R E Q L hCSK (JH0559)

479 A R E L R S A G A P A S V S G O D A D G S T S P R S O E P MKK1 aa  
441 E H - - - - - I K T H E L H - - - - - L hCSK (JH0559)

FIGURE 9

1 M D T K S I L E E L L L K R S Q Q K K K M S P N N Y K E R L MKK2 aa  
1 M A A - V I L E S I F L K R S Q Q K K K T S P L N F K K R L hAtk (X58957)  
1 M N N F I L L E E Q L I K K S O O K R R T S P S N F K V R F hTKT (L10717)  
1 M M V - - - - - mTec (X5663)

31 F V L T K T N L S Y Y E - - Y D K M K R G S R K G S I E I K MKK2 aa  
30 F L L T V H K L S Y Y E Y D F E R G R R G S K K G S I D V E hAtk (X58957)  
31 F V L T K A S L A Y F E D R - - H G K K R T L K G S I E L S hTKT (L10717)  
4 - - - - - mTec (X5663)

59 K I R C V E K V N L E E Q T P V E R Q - - - - - MKK2 aa  
60 K I T C V E T V V P E K N P P P E R O I P R R G E E S S E M hAtk (X58957)  
59 R I K C V E I V K S D - - - - - hTKT (L10717)  
4 - - - - - mTec (X5663)

78 - - - - - Y P F Q I V Y K D G L L Y V Y A S N E E MKK2 aa  
90 E Q I S I I E R F P Y P F Q V V Y D E G P L Y V F S P T E E hAtk (X58957)  
70 - - I S I P C H Y K Y P F Q V V H D N Y L L Y V F A P D R E hTKT (L10717)  
4 - - - - - S F P V K I N F H S S P - - - - - Q mTec (X5663)

98 S R S Q W L K A L Q K E I R G N P H L L V K Y H S G F F V D MKK2 aa  
120 L R K R W I H Q L K N V I R Y N S D L V Q K Y H P C F W I D hAtk (X58957)  
98 S R Q R W V L A L K E E T R N N N S L V P K Y H P N F W M D hTKT (L10717)  
17 S R D R W V K K L K E E I K N N N N I M I K Y H P K F W A D mTec (X5663)

128 G K F L C C Q Q S C K A A P G C T L W E A Y A N L H T A V N MKK2 aa  
150 G Q Y L C C S Q T A K N A M G C Q I L E N R N G S L K P G S hAtk (X58957)  
128 G K W R C C S Q L E K L A T G C A Q Y D - - - - - P hTKT (L10717)  
47 G S Y Q C C R Q T E K L A P G C E K Y N L F E S S I - - - - - mTec (X5663)

158 E E K H R V P T F P D R V L K I P R A V P V L K M D A P S S MKK2 aa  
180 S H R K T K K P L P P - - - - T P E E D Q I L K K P L P P E hAtk (X58957)  
149 T K N A S K K P L P P - - - - T P E D N R - - - - - hTKT (L10717)  
73 - - - - - R K T L P P - - - - A P E - - - - I K K R R P P - mTec (X5663)

188 S T T L A Q Y D N E S K K N Y G S Q P P S S S T S L A Q Y D MKK2 aa  
206 P A A A P V S T S E L K K - - - - - V V A L Y D hAtk (X58957)  
166 - - - R P L W E P E E T V - - - - - V I A L Y D hTKT (L10717)  
89 P P I P P E E E N T E E I - - - - - V V A M Y D mTec (X5663)

218 S N S K K I Y G S Q P N F N M Q Y I P R E D F P - D W W Q V MKK2 aa  
225 Y M P M N A N D L O L R K G D E Y F I L E E S N L P W W R A hAtk (X58957)  
182 Y Q T N D P Q E L A L R R N E E Y C L L D S S E I H W W R V hTKT (L10717)  
108 F O A T E A H D L R L E R G Q E Y I L L E K N D L H W W R A mTec (X5663)

247 R K L K S S S S S E D V A S S N Q K E R N V N H T T S K I S MKK2 aa  
255 R D - - K N G Q E G Y I P S N Y V T E - A - - - - hAtk (X58957)  
212 Q D - - R N G H E G Y V P S S Y L V E K S - - - - - hTKT (L10717)  
138 R D - - K - - - - - mTec (X5663)

277 W E F P E S S S S E E E E N L D D Y D W F A G N I S R S Q S MKK2 aa  
273 - - - - - E D S I E M Y E W Y S K H M T R S O A hAtk (X58957)  
231 - - - - - P N N L E T Y E W Y N K S I S R D K A hTKT (L10717)  
141 - - - - - Y G W Y C R N T N R S K A mTec (X5663)

307 E Q L L R Q K G K E G A F M V R N S S Q V G M Y T V S L F S MKK2 aa  
292 E Q L L K O E G K E G G F I V R D S S K A G K Y T V S V F A hAtk (X58957)  
250 E K L L L D T G K E G A F M V R D S R T A G T Y T V S V F T hTKT (L10717)  
154 E Q L L R T E D K E G G F M V R D S S Q P G L Y T V S L Y T mTec (X5663)

FIGURE 10A

337 K - A V N D K K G T V K H Y H V H - - T N A E N K L Y L A E MKK2 aa  
 322 K S T - G D P Q G V I R H Y V V - - C S T P Q S Q Y Y L A E hAtk (X58957)  
 280 K A V V S E N N P C I K H Y H I K E T N D N P K R Y Y V A E hTKT (L10717)  
 184 K F G - G E G S S G F R H Y H I K E T A T S P K K Y Y L A E mTec (X5663)

364 N Y C F D S I P K L I H Y H Q H N S A G M I T R L R H P V S MKK2 aa  
 349 K H L F S T I P E L I N Y H Q H N S A G L I S R L K Y P V S hAtk (X58957)  
 310 K Y V F D S I P L L I N Y H Q H N G G L V T R L R Y P V C hTKT (L10717)  
 213 K H A F G S I P E I I E Y H K H N A A G L V T R L R Y P V S mTec (X5663)

394 T K A N K V P D S V S L G N G I W E L K R E E I T L L K E L MKK2 aa  
 379 Q Q N K N A P S T A G L G Y G S W E I D P K D L T F L K E L hAtk (X58957)  
 340 F G R Q K A P V T A G L R Y G K W V I D P S E L T F V Q E I hTKT (L10717)  
 243 T K G K N A P T T A G F S Y D K W E I N P S E L T F M R E L mTec (X5663)

424 G S G Q F G V V Q L G K W K G Q Y D V A V K M I K E G S M S MKK2 aa  
 409 G T G Q F G V V K Y G K W R G Q Y D V A I K M I K E G S M S hAtk (X58957)  
 370 G S G Q F G L V H L G Y W L N K D K V A I K T I R E G A M S hTKT (L10717)  
 273 G S G L F G V V R L G K W R A O Y K V A I K A I R E G A M C mTec (X5663)

454 E D E F F Q E A Q T M M K L S H P K L V K F Y G V C S K E Y MKK2 aa  
 439 E D E F I E E A K V M M N L S H E K L V Q L Y G V C T K Q R hAtk (X58957)  
 400 E E D F I E E A E V M M K L S H P K L V Q L Y G V C L E Q A hTKT (L10717)  
 303 E E D F I E E A K V M M K L T H P K L V Q L Y G V C T Q O K mTec (X5663)

484 P I Y I V T E Y I S N G C L L N Y L R S H G K G L E P S Q L MKK2 aa  
 469 P I F I I T E Y M A N G C L L N Y L R E M R H R F Q T Q O L hAtk (X58957)  
 430 P I C L V F E F M E H G C L S D Y L R T Q R G L F A A E T L hTKT (L10717)  
 333 P I Y I V T E F M E R G C L L N F L R Q R Q G H F S R D M L mTec (X5663)

514 L E M C Y D V C E G M A F L E S H Q F I H R D L A A R N C L MKK2 aa  
 499 L E M C K D V C E A M E Y L E S K O F L H R D L A A R N C L hAtk (X58957)  
 460 L G M C L D V C E G M A Y L E E A C V I H R D L A A R N C L hTKT (L10717)  
 363 L S M C Q D V C E G M E Y L E R N S F I H R D L A A R N C L mTec (X5663)

544 V D R D L C V K V S D F G M T R Y V L D D Q Y V S S V G T K MKK2 aa  
 529 V N D Q G V V K V S D F G L S R Y V L D D E Y T S S V G S K hAtk (X58957)  
 490 V G E N Q V I K V S D F G M T R F V L D D Q Y T S S T G T K hTKT (L10717)  
 393 V N E A G V V K V S D F G M A R Y V L D D Q Y T S S S G A K mTec (X5663)

574 F P V K W S A P E V F H Y F K Y S S K S D V W A F G I L M W MKK2 aa  
 559 F P V R W S P P E V L M Y S K F S S K S D I W A F G V L M W hAtk (X58957)  
 520 F P V K W A S P E V F S F S R Y S S K S D V W S F G V L M W hTKT (L10717)  
 423 F P V K W C P P E V F N Y S R F S S K S D V W S F G V L M W mTec (X5663)

604 E V F S L G K Q P Y D L Y D N S Q V V L K V S Q G H R L Y R MKK2 aa  
 589 E I Y S L G K M P Y E R F T N S E T A E H I A O G L R L Y R hAtk (X58957)  
 550 E V F S E G K I P Y E N R S N S E V V E D I S T G F R L Y K hTKT (L10717)  
 453 E I F T E G R M P F E K N T N Y E V V T M V T R G H R L H R mTec (X5663)

634 P H L A S D T I Y Q I M Y S C W H E L P E K R P T F Q Q L L MKK2 aa  
 619 P H L A S E K V Y T I M Y S C W H E K A D E R P T F K I L L hAtk (X58957)  
 580 P R L A S T H V Y Q I M N H C W K E R P E D R P A F S R L L hTKT (L10717)  
 483 P K L A T K Y L Y E V M L R C W Q E R P E G R P S F E D L L mTec (X5663)

664 S S I E P L R E K D K H MKK2 aa  
 649 S N I L D V M D E E S hAtk (X58957)  
 610 R Q L A E I A E S - - - G L hTKT (L10717)  
 513 R T I D E L V E C E E T F G R mTec (X5663)

FIGURE 10B

1 MSNICQRLWE - - - - - MKK3 MPI aa  
1 MGC VQC KDK EA - T - - - KLT EER DGS LNQ - S hFyn  
1 MGC VHC KKKI S - G - - - KGG GSG TGT PA - H cYrk  
1 MGS NKS KPK DA - SQR - RRS LE PAENVHG - A hSrc  
1 MGC IKS KEN KS - PAI - KYRPE ENTPEPV S - T hYes  
1 MGC VFC KKL EP - VATA KEDAGLE GDFRSY G hFgr  
1 MGC IKS KGL SLD DGV DL - KTQ PVR NTER hLyn  
1 MGS MKSK - - - FLQ VGGNTFS KTE T S A S PHC hHck  
1 MGC GCS S - - - HPE DDM EN IDVC EN CHY hLck  
1 MGL LSS SKR QV SEK GKGWSPVK IRT QDK A PP mBlk

11 - - - - - YLE P MKK3 MPI aa  
26 SGY RYGT DPT P QHY P SFG VTS IPN - - YNNF hFyn  
26 PPS QYD PDPT - QLS GAF - - THIPD - - FNNF cYrk  
28 GGG AFPA SQT P SKP A S ADG HRGP SAA FAPA hSrc  
28 SVSHYGA EPT TVSP CPSS SAKGTAVNF SSL hYes  
30 AADHYG PDPT KAR P AS - SFA HIPN - - YSNF hFgr  
30 TIYVRDPT SNK QORP VPESQLLP GQR FQTK hLyn  
28 PVYVPDPT STIK PGPNS SHNSNT PGIR - - - hHck  
26 PIVPLD GKGTL LIRNGS EVRD - PLVTYEGS hLck  
31 PLLPPLVVFNL LAP P S PNQ - - - - - mBlk

15 YLPC LSTEADKSTV IENPGALCSPQSQRHG MKK3 MPI aa  
54 HAA - - - GGQGLTV FGG VN - - SSSHTGTLRT hFyn  
51 HAA - - - AVSPPVP FSG PGFYPCNTLQAHSS cYrk  
58 AAEP - - - - - KLFGGFNS SDT VTS PQRAG hSrc  
58 SMT PFGGSSGVTP FGG ASSSFSVVPSSYP A hYes  
57 SSQA INPG - - - - - F - - - - - LDSGTIRG hFgr  
60 DPEE - - - - - QG - - - - - hLyn  
54 EAGS - - - - - ED - - - - - hHck  
55 NPPA - - - - - SPLQD - - - - - hLck  
49 DPDE - - - - - EE - - - - - mBlk

45 H - - - - - YFVALFDYQARTAE DLSFRA GDK MKK3 MPI aa  
79 RGGT GVT L FVALYDYEARTE DDLSFHKGEK hFyn  
78 ITGG GVT L FIALYDYEARTE DDLSFQKGEK cYrk  
81 PLAG GVT T FVALYDYES RTE T DLSFKKER hSrc  
88 GLTG GVT I FVALYDYEARTE DLSFKKER hYes  
74 VSGI GVT L FIALYDYEARTE DDLTFTKGEK hFgr  
66 - - - - - DIVVALY P YDGIHPD DLSFKKER hLyn  
60 - - - - - IIVVALYDYEA IHHEDLSFQKGDQ hHck  
64 - - - - - NLVIALHSYEP SHDGLGF EKGEQ hLck  
55 - - - - - RFVVALFDYAAVNDRLQVLKGEK mBlk

69 LQVLDLTH EGWWFARHLEKRRDGS SQQ LQG MKK3 MPI aa  
109 FOILN SSEG DWWEARS LTTGETG - - - - - hFyn  
108 FHI I NNTEGDWWEARS LSSGATG - - - - - cYrk  
111 LQIVN NTEGDWWEARS LAHSLSTGQTG - - - - - hSrc  
118 FOI I NNTEGDWWEARS IATGKNG - - - - - hYes  
104 FHI L N NTEGDWWEARS LSSSGKTG - - - - - hFgr  
90 MKVL EEH - GEWWKAKSL LTKKEG - - - - - hLyn  
84 MVVL EES - GEWWKARS LATRKEG - - - - - hHck  
88 LRI LEQS - GEWWKAQSL TTGQEG - - - - - hLck  
79 LOV L RST - GDWWLARS LV TGREG - - - - - mBlk

FIGURE 11A



99 Y I P S N Y V A E D R S L Q A E P W F F G A I G R S D A E K MKK3 MPI aa  
132 Y I P S N Y V A P V D S I Q A E E W Y F G K L G R K D A E R hFyn  
131 Y I P S N Y V A P V D S I Q A E E W Y F G K I G R K D A E R cYrk  
134 Y I P S N Y V A P S D S I Q A E E W Y F G K I T R R E S E R hSrc  
141 Y I P S N Y V A P A D S I Q A E E W Y F G K M G R K D A E R hYes  
127 C I P S N Y V A P V D S I Q A E E W Y F G K I G R K D A E R hFgr  
112 F I P S N Y V A K L N T L E T E E W F F K D I T R K D A E R hLyn  
106 Y I P S N Y V A R V D S L E T E E W F F K G I S R K D A E R hHck  
110 F I P F N F V A K A N S L E P E P W F F K N L S R K D A E R hLck  
101 Y V P S N F V A P V E T L E V E K W F F R T I S R K D A E R mBlk

129 Q L L Y S E N K T G S F L I R E S E S Q K G E F S L S V L D MKK3 MPI aa  
162 Q L L S F G N P R G T F L I R E S E T T K G A Y S L S I R D hFyn  
161 Q L L C H G N C R G T F L I R E S E T T K G A Y S L S I R D cYrk  
164 L L L N A E N P R G T F L V R E S E T T K G A Y C L S V S D hSrc  
171 L L L N P G N Q R G I F L V R E S E T T K G A Y S L S I R D hYes  
157 Q L L S P G N P Q G A F L I R E S E T T K G A Y S L S I R D hFgr  
142 Q L L A P G N S A G A F L I R E S E T L K G S F S L S V R D hLyn  
136 Q L L A P G N M L G S F M I R D S E T T K G S Y S L S V R D hHck  
140 Q L L A P G N T H G S F L I R E S E S T A G S F S L S V R D hLck  
131 Q L L A P M N K A G S F L I R E S E S N K G A F S L S V K D mBlk

159 - - - - - G A V V K H Y R I K R L D E G G F F L T R R R I F MKK3 MPI aa  
192 W D D M K G D H V K H Y K I R K L D N G G Y Y I T T R A Q F hFyn  
191 W D E A K G D H V K H Y K I R K L D S G G Y Y I T T R A Q F cYrk  
194 F D N A K G L N V K H Y K I R K L D S G G F Y I T S R T Q F hSrc  
201 W D E I R G D N V K H Y K I R K L D N G G Y Y I T T R A Q F hYes  
187 W D Q T R G D H V K H Y K I R K L D M G G Y Y I T T R V Q F hFgr  
172 F D P V H G D V I K H Y K I R S L D N G G Y Y I S P R I T F hLyn  
166 Y D P R Q G D T V K H Y K I R T L D N G G F Y I S P R S T F hHck  
170 F D Q N Q G E V V K H Y K I R N L D N G G F Y I S P R I T F hLck  
161 I T T - O G E V V K H Y K I R S L D N G G Y Y I S P R I T F mBlk

184 S T L N E F V S H Y T K T S D G L C V K L G K P C L K I Q V MKK3 MPI aa  
222 E T L Q Q L V Q H Y S E R A A G L C C R L V V P C H K G M - hFyn  
221 D T I Q Q L V Q H Y I E R A A G L C C R L A V P C P K G T - cYrk  
224 N S L Q Q L V A Y Y S K H A D G L C H R L T T V C P T S K - hSrc  
231 D T L Q K L V K H Y T E H A D G L C H K L T T V C P T V K - hYes  
217 N S V Q E L V O H Y M E V N D G L C N L L I A P C T I M K - hFgr  
202 P C I S D M I K H Y Q K Q A D G L C R R L E K A C I S P K - hLyn  
196 S T L Q E L V D H Y K K G N D G L C O K L S V P C M S S K - hHck  
200 P G L H E L V R H Y T N A S D G L C T R L S R P C Q T Q K - hLck  
190 P T L O A L V O H Y S K K G D G L C O K L T L P C V N L A - mBlk

214 P A P F D L S Y K T V D Q W E I D R N S I Q L L K R L G S G MKK3 MPI aa  
251 P R L T D L S V K T K D V W E I P R E S L Q L I K R L G N G hFyn  
250 P K L A D L S V K T K D V W E I P R E S L Q L L Q K L G N G cYrk  
253 P Q T Q G L A - - - K D A W E I P R E S L R L E V K L G Q G hSrc  
260 P Q T Q G L A - - - K D A W E I P R E S L R L E V K L G Q G hYes  
246 P Q T L G L A - - - K D A W E I S R S I T L E R R L G T G hFgr  
231 P Q - - - - K P W D K D A W E I P R E S I K L V K R L G A G hLyn  
225 P Q - - - - K P W E K D A W E I P R E S L K L E K K L G A G hHck  
229 P Q - - - - K P W W E D E W E V P R E T L K L V E R L G A G hLck  
219 P K - - - - N L W A Q D E W E I P R Q S L K L V R K L G S G mBlk

FIGURE 11B

244 Q F G E V W E G L W N N T T P V A V K T L K P G S M D P N D MKK3 MPI aa  
 281 Q F G E V W M G T W N G N T K V A I K T L K P G T M S P E S hFyn  
 280 Q F G E V W M G T W N G T T K V A V K T L K P G T M S P E A cYrk  
 280 C F G E V W M G T W N G T T R V A I K T L K P G T M S P E A hSrc  
 287 C F G E V W M G T W N G T T K V A I K T L K P G T M M P E A hYes  
 273 C F G D V W L G T W N G S T K V A V K T L K P G T M S P K A hFgr  
 257 Q F G E V W M G Y Y N N S T K V A V K T L K P G T M S V Q A hLyn  
 251 Q F G E V W M A T Y N K H T K V A V K T M K P G S M S V E A hHck  
 255 Q F G E V W M G Y Y N G H T K V A V K S L K Q G S M S P D A hLck  
 245 Q F G E V W M G Y Y K N N M K V A I K T L K E G T M S P E A mBlk

274 F L R E A Q I M K N L R H P K L I Q L Y A V C T L E D P I Y MKK3 MPI aa  
 311 F L E E A Q I M K K L K H D K L V Q L Y A V V S - E E P I Y hFyn  
 310 F L E E A Q I M K R L R H D K L V Q L Y A V V S - E E P I Y cYrk  
 310 F L Q E A Q V M K K L R H E K L V Q L Y A V V S - E E P I Y hSrc  
 317 F L Q E A Q I M K K L R H D K L V P L Y A V V S - E E P I Y hYes  
 303 F L E E A Q V M K L L R H D K L V Q L Y A V V S - E E P I Y hFgr  
 287 F L E E A N L M K T L Q H D K L V R L Y A V V T R E E P I Y hLyn  
 281 F L A E A N V M K T L Q H D K L V K L H A V V T K E - P I Y hHck  
 285 F L A E A N L M K Q L Q H Q R L V R L Y A V V T - Q E P I Y hLck  
 275 F L G E A N V M K T L Q H E R L V R L Y A V V T R E - P I Y mBlk

304 I I T E L M R H G S L Q E Y L Q N D T G S K I H L T Q Q V D MKK3 MPI aa  
 340 I V T E Y M N K G S L L D F L K D G E G R A L K L P N L V D hFyn  
 339 I V T E F M S Q G S L L D F L K D G D G R Y L K L P Q L V D cYrk  
 339 I V T E Y M S K G S L L D F L K G E T G K Y L R L P Q L V D hSrc  
 346 I V T E F M S K G S L L D F L K E G D G K Y L K L P Q L V D hYes  
 332 I V T E F M C H G S L L D F L K N P E G Q D L R L P Q L V D hFgr  
 317 I I T E Y M A K G S L L D F L K S D E G G K V L P K L I D hLyn  
 310 I I T E F M A K G S L L D F L K S D E G S K Q P L P K L I D hHck  
 314 I I T E Y M E N G S L V D F L K T P S G I K L T I N K L L D hLck  
 304 I V T E Y M A R G C L L D F L K T D E G S R L S L P R L I D mBlk

334 M A A Q V A S G M A Y L E S R N Y I H R D L A A R N V L V G MKK3 MPI aa  
 370 M A A Q V A A G M A Y I E R M N Y I H R D L R S A N I L V G hFyn  
 369 M A A Q I A A G M A Y I E R M N Y I H R D L R A A N I L V G cYrk  
 369 M A A Q I A S G M A Y V E R M N Y V I H R D L R A A N I L V G hSrc  
 376 M A A Q I A D G M A Y I E R M N Y I H R D L R A A N I L V G hYes  
 362 M A A Q V A E G M A Y M E R M N Y I H R D L R A A N I L V G hFgr  
 347 F S A Q I A E G M A Y I E R K N Y I H R D L R A A N V L V S hLyn  
 340 F S A Q I A E G M A F I E Q R N Y I H R D L R A A N I L V S hHck  
 344 M A A Q I A E G M A F I E E R N Y I H R D L R A A N I L V S hLck  
 334 M S A Q V A E G M A Y I E R M N S I H R D L R A A N I L V S mBlk

364 E H N I Y K V A D F G L A R V F K V D N E D I Y E S R H E I MKK3 MPI aa  
 400 N G L I C K I A D F G L A R L I - - - E D N E Y T A R Q G A hFyn  
 399 D N L V C K I A D F G L A R L I - - - E D N E Y T A R Q G A cYrk  
 399 E N L V C K V A D F G L A R L I - - - E D N E Y T A R Q G A hSrc  
 406 E N L V C K I A D F G L A R L I - - - E D N E Y T A R Q G A hYes  
 392 E R L A C K I A D F G L A R L I - - - K D D E Y N P C Q G S hFgr  
 377 E S L M C K I A D F G L A R V I - - - E D N E Y T A R E G A hLyn  
 370 A S L V C K I A D F G L A R V I - - - E D N E Y T A R E G A hHck  
 374 D T L S C K I A D F G L A R L I - - - E D N E Y T A R E G A hLck  
 364 E T L C C K I A D F G L A R I I - - - D S E Y T A Q E G A mBlk

FIGURE 11C

394	K	L	P	V	K	W	T	A	P	E	A	I	R	S	N	K	F	S	I	K	S	D	V	W	S	F	G	I	L	L	MKK3 MPI aa
427	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFyn
426	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	K	F	T	I	K	S	D	V	W	S	F	G	I	L	L	cYrk
426	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hSrc
433	K	F	P	I	K	W	T	A	P	E	A	A	L	Y	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hYes
419	K	F	P	I	K	W	T	A	P	E	A	A	L	F	G	R	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hFgr
404	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	C	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLyn
397	K	F	P	I	K	W	T	A	P	E	A	I	N	F	G	S	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hHck
401	K	F	P	I	K	W	T	A	P	E	A	I	N	Y	G	T	F	T	I	K	S	D	V	W	S	F	G	I	L	L	hLck
390	K	F	P	I	K	W	T	A	P	E	A	I	H	F	G	V	F	T	I	K	A	D	V	W	S	F	G	V	L	L	mBlk

424	Y	E	I	I	T	Y	G	K	M	P	Y	S	G	M	T	G	A	Q	V	I	Q	M	L	A	Q	N	Y	R	L	P	MKK3 MPI aa
457	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hFyn
456	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	N	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	cYrk
456	T	E	L	T	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	D	Q	V	E	R	G	Y	R	M	P	hSrc
463	T	E	L	V	T	K	G	R	V	P	Y	P	G	M	V	N	R	E	V	L	E	Q	V	E	R	G	Y	R	M	P	hYes
449	T	E	L	I	T	K	G	R	I	P	Y	P	G	M	N	K	R	E	V	L	E	Q	V	E	Q	G	Y	H	M	P	hFgr
434	Y	E	I	V	T	Y	G	K	I	P	Y	P	G	R	T	N	A	D	V	M	T	A	L	S	Q	G	Y	R	M	P	hLyn
427	M	E	I	V	T	Y	G	R	I	P	Y	P	G	M	S	N	P	E	V	I	R	A	L	E	R	G	Y	R	M	P	hHck
431	T	E	I	V	T	H	G	R	I	P	Y	P	G	M	T	N	P	E	V	I	Q	N	L	E	R	G	Y	R	M	V	hLck
420	M	V	I	V	T	Y	G	R	V	P	Y	P	G	M	S	N	P	E	V	I	R	S	L	E	H	G	Y	R	M	P	mBlk

454	Q	P	S	N	C	P	Q	Q	F	Y	N	-	I	M	L	E	C	W	N	A	E	P	K	E	R	P	T	F	E	T	MKK3 MPI aa
487	C	P	Q	D	C	P	I	S	L	H	-	E	L	M	I	H	C	W	K	K	D	P	E	E	R	P	T	F	E	Y	hFyn
486	C	P	G	G	C	P	P	S	L	H	-	D	V	M	V	Q	C	W	K	R	E	P	E	E	R	P	T	F	E	Y	cYrk
486	C	P	P	E	C	P	E	S	L	H	-	D	L	M	C	Q	C	W	R	K	E	P	E	E	R	P	T	F	E	Y	hSrc
493	C	P	Q	G	C	P	E	S	L	H	-	E	L	M	N	L	C	W	K	K	D	P	D	E	R	P	T	F	E	Y	hYes
479	C	P	P	G	C	P	A	S	L	Y	-	E	A	M	E	Q	T	W	R	L	D	P	E	E	R	P	T	F	E	Y	hFgr
464	R	V	E	N	C	P	D	E	L	Y	-	D	I	M	K	M	C	W	K	E	K	A	E	E	R	P	T	F	D	Y	hLyn
457	R	P	E	N	C	P	E	E	L	Y	-	N	I	M	M	R	C	W	K	N	R	P	E	E	R	P	T	F	E	Y	hHck
461	R	P	D	N	C	P	E	E	L	Y	-	Q	L	M	R	L	C	W	K	E	R	P	E	D	R	P	T	F	D	Y	hLck
450	C	P	E	T	C	P	P	E	L	Y	N	D	I	I	T	E	C	W	R	G	R	P	E	E	R	P	T	F	E	F	mBlk

483	L	R	W	K	L	E	D	Y	F	E	-	T	D	S	S	Y	S	D	A	N	N	F	I	R	MKK3 MPI aa	
516	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L	hFyn
515	L	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	D	N	-	-	-	Q	cYrk
515	L	Q	A	F	L	E	D	Y	F	T	S	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L	hSrc
522	I	Q	S	F	L	E	D	Y	F	T	A	T	E	P	Q	Y	Q	P	G	E	N	-	-	-	L	hYes
508	L	Q	S	F	L	E	D	Y	F	T	S	A	E	P	Q	Y	Q	P	G	D	Q	-	-	-	T	hFgr
493	L	Q	S	V	L	D	D	F	Y	T	A	T	E	G	Q	Y	Q	Q	-	-	Q	-	-	-	P	hLyn
486	I	Q	S	V	L	D	D	F	Y	T	A	T	E	S	Q	Y	Q	Q	-	-	Q	-	-	-	P	hHck
490	L	R	S	V	L	E	D	F	F	T	A	T	E	G	Q	Y	Q	P	-	-	Q	-	-	-	P	hLck
480	L	Q	S	V	L	E	D	F	Y	T	A	T	E	G	Q	Y	E	L	-	-	Q	-	-	-	P	mBlk

FIGURE 11D